

# BS in Natural Sciences (Science Teaching)

## The Departments of Biology, Chemistry, Geology, and Physics offer a Bachelor of Science in Natural Sciences.

This degree program offers the required subject matter content to help prepare prospective science teachers to apply for subject matter certification in California by taking the California Subject-matter Examinations for Teachers (CSET) in Science. The four disciplinary concentrations within the BS in Natural Sciences prepare the candidate for the CSET Science exams, which consist of three exams: two covering breadth in science (Life Science, Chemistry, Earth and Planetary Science, and Physics), and one covering depth in one of these areas, corresponding to the primary concentration. Passage of the CSET in science is required to certify subject matter competency before entering a teacher credential program for prospective teachers. Consult with your advisor or the Department of Education for details on other entry requirements for pursuing a secondary teaching credential.

The foundational science concentration prepares students for the foundational science CSET exams (two exams covering science breadth, as above) and includes credential coursework, providing science subject matter and the credential in a blended program.

The BS in Natural Sciences offers a broad foundation in all four of the natural science areas (Biology, Chemistry, Geology, and Physics). The disciplinary concentration adds depth preparation in one of the four

areas, while the foundational science concentration adds credential coursework to this foundation. While this broad foundation has been developed for prospective teachers, it also serves as excellent preparation for employment in any area of business, industry or government where scientific skills are in demand.

### Disciplinary concentrations

Consist of two components:

#### I. Core Coursework

covers all four sciences plus mathematics and which all students complete.

#### II. Concentration

consisting of additional upper division courses within a specific science discipline (Biology, Chemistry, Geology or Physics).

#### An Optional minor

in a second science discipline, Mathematics, or Statistics can allow you to satisfy subject matter competency in a 2<sup>nd</sup> subject, increasing your attractiveness to employers.

### Foundational science concentration

The foundational science concentration requires the same core coursework as the disciplinary concentrations, but the primary concentration in a science discipline is replaced by teaching credential coursework. The foundational science concentration has been developed for individuals seeking the Foundational Science Credential for Middle School and Junior High School science teachers, and prepares the candidate for the

CSET exams in Foundational Science, which consist of 2 exams covering breadth in science (Life Science, Chemistry, Earth and Planetary Science and Physics). This allows students to earn the Foundational Science Credential in a blended, 4-year program including both science and credential coursework.

Please remember that for the foundational concentration: 1) **passage of the CSET is required before admission to credential coursework** beyond the foundational level, and 2) the Foundational Science Credential is valid only for teaching grades **6-8**. Additional appropriate post-baccalaureate coursework and CSET exams can be taken to add an authorization for High School level single subject certification.

### For more Information:

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Program Website:  
[http://www.csub.edu/natural\\_sciences/index.html](http://www.csub.edu/natural_sciences/index.html)

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Biology: 654-3089  
Chemistry: 654-3089  
Geology: 654-3027  
Physics: 654-3027

School of Natural Sciences and Mathematics  
654-3450

# Requirements for the BS in Natural Sciences

## BS in Natural Sciences Disciplinary Concentrations

Students complete the core coursework (I) one concentration (II) and may choose an optional minor (III)

### I. Core Coursework (46-50 Units)

#### Life Science (12 units)

BIOL 2010, 2110, and 2120

#### Chemistry (11 Units)

CHEM 1000, 1001, 1100, 1600 & 2300

#### Earth and Planetary Science (11 Units)

GEOL 2010, and 2040

One of: GEOL 3080 or PHYS 1609,

#### Math (4-10 Units)

MATH 2010<sup>1</sup> or 2200 or 2510<sup>2</sup>

AND satisfaction of necessary prerequisites for course chosen

#### Physics (8-12 Units)

PHYS 2110 & 2120

**OR**

PHYS 2210<sup>2</sup>, 2220<sup>2</sup> and 2230<sup>2</sup>

### II. Concentrations -- Select one

#### Biology Concentration: (32 Units)

BIOL 3010, 3020, 3110, 3120, 3410, 4100 & 4910

One of: BIOL 2220 or 3550

One elective from: MATH 2020 (or higher), BIOL 2210, or any additional BIOL  $\geq 3220$  &  $\geq 3$  units

One BIOL elective  $\geq 4200$  &  $\geq 4$  units

#### Chemistry Concentration: (31 units)

MATH 2020

CHEM 2200, 2400, 2840 & 2900

CHEM 3100, 3300, 3301, 3600, 3900, 4830, 4840 & 4900

#### Geology Concentration: (32 Units)

GEOL 3010, 3020, 3030, 3040, 3070, 3090 & 4908

One GEOL elective  $>3000$  &  $\geq 4$  units

#### Physics Concentration<sup>1</sup>: (28 units)

MATH 2520 & 2530

PHYS 2070, 3010, 3070, 3500, 3510 & 4900

PHYS electives  $\geq 3000$  totaling  $\geq 4$  units.

**III. Optional Minors<sup>3</sup>.** Students are encouraged to complete a minor in a second science, mathematics or applied statistics. For students pursuing science minors, 2 or more courses (8 units) from the core, in the same discipline as the minor, will be counted towards the minor. Minors are highly recommended. Additional subject matter competency can be established via the CSET in the area of the minor, increasing versatility and job prospects of the prospective teacher.

## BS in Natural Sciences: Foundational science concentration (44-47 Units)

I. Core Coursework: see I above (46-50 Units)

II. Concentration in education: (45-47 units):

Foundational/prerequisite courses: EDTE 3000 (or 3100), 3308, 4100 & 4200

Semester I: EDSE 5100, 5210, 5300; EDTE 4310 & 4320

Semester II: EDSE 5400, 5500; EDTE 4330, 4340; & either EDTE 5800 or EDSE 5800.

III. Senior Seminar: SCI 4110 (1 unit)

<sup>1</sup> Required in the Biology or Chemistry concentrations;

<sup>2</sup> Required for the Physics Concentration or minor.

<sup>3</sup> See Appropriate Department description for requirements.